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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,920	09/30/2003	Craig T. Baldwin	TAZ-256	2601
37694	7590	09/20/2006	EXAMINER	
WOOD, HERRON & EVANS, LLP (TOKYO ELECTRON)			MOORE, KARLA A	
2700 CAREW TOWER			ART UNIT	
441 VINE STREET			PAPER NUMBER	
CINCINNATI, OH 45202			1763	

DATE MAILED: 09/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/674,920

Applicant(s)

BALDWIN ET AL.

Examiner

Karla Moore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 10 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,3,5-20,24 and 25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2,3,5-20,24 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 2-3, 5-20 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2001/0051437 A1 to Cruse in view of U.S. Patent No. 6,863,018 to Koizumi et al. and 5,025,135 to Gesche et al.

4. Cruse discloses a material processing system substantially as claimed and comprising: a processing tool, a test signal source (paragraph 27) providing a first test signal and a second test signal, which are RF signals; a filter/detector (122) for determining an intermodulation product of the first test signal and the first test signal (see paragraphs 33 and 37); and a controller

(paragraph 20) coupled to the filter/detector and the processing tool for determining characteristics of processing within the chamber.

5. However, Cruse fail to teach the test signal source comprising a first source for providing the first test signal, a second source for providing the second signal, a summing circuit for combining the first test signal and the second test signal, an isolation amplifier for amplifying the first test signal and the second test signal, and antenna for transmitting the first test signal and the second test signal, wherein the antenna is coupled to the process chamber.

6. Koizumi et al. teach providing a summing circuit (function generator) and an isolation amplifier (linear amplifier) for providing two signals to a plasma processing chamber for the purpose of doing so in a unitarily managed and easily adjustable way (column 9, rows 19-55).

7. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a function generator and an isolation amplifier in Cruse in order to provide two singles in a unitarily managed and easily adjustable way as taught by Koizumi et al.

8. One of ordinary skill in the art would have further realized that the signals would be provided to the process chamber via an antenna, as this is conventional.

9. Cruse and Koizumi disclose the invention substantially as claimed and as described above.

10. However, while Cruse does fairly teach process monitoring of various parameters of a plasma process taking place in material processing system (including means for determining that a particular situation in response to detection of an intermodulation product and for controlling a

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processing tool in response to the determination; where the means are a data acquisition and processing routine/ executable software program, paragraph 31), Cruse fails to explicitly teach means for determining that a plasma is present in the chamber in response to detection of an intermodulation product and for determining that a plasma is absent from the chamber in absence of the detection of an intermodulation product, and for controlling the processing tool in response to the determinations.

11. Gesche et al. teaches that in addition to other parameters to be monitored during plasma processing it is also important in all plasma processes to determine the onset of plasma generation (column 1, rows 22-24 and column 4, rows 12-23).

12. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided means for determining that a plasma is present in the chamber in response to detection of intermodulation products and for determining that a plasma is absent from the chamber in absence of the detection of intermodulation products, and for controlling the processing tool in response to the determinations in Cruse and Koizumi et al. as taught by Gesche et al.

13. With respect to claims 2 and 3, which are drawn to specific signals created during processing which would be directly dependent on the intended processing, the courts have ruled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

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14. With respect to claim 5, Cruse also teach that a RF bias source (108 or 112) may also provide a signal and that a RF subsystem (110) is coupled to the RF bias source, and the test signal sources (via the processing chamber), wherein the RF subsystem comprises means for combining the first signal, the second signal, and the RF bias signal (by providing the RF bias signal to the controller/analyzer) and means for providing the first signal, the second signal, and the RF bias signal to the process chamber (see paragraph 31).

15. With respect to claim 6, the RF bias signal is used to generate plasma (paragraph 25). With respect to the relation between signals, which would depend on various processing parameters, the courts have ruled that a claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

16. With respect to claim 7, Cruse teaches that the filter/detector may be configured in various ways depending on the parameters to be detected (paragraph 27).

17. With respect to claims 8-10, the product of the signals are directly related to the signals and therefore dependent on the intended processing, the courts have ruled that a claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

18. With respect to claims 11-14, the filter detector further comprises a power source (128) coupled to at least the filter (paragraph 30). The power source is connected to computer that

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would be capable comprising software for conversion of signals (also see Figure 1). The controller comprises at least one of a microprocessor, a microcontroller, a timer, a digital signal processor, memory, receiver, A/D converter and D/A converter (again see paragraph 30 and Figure 1).

19. With respect to claim 17, the test signal source further comprises a power source coupled to at least one of the detector/filter or an antenna. The RF power supply and the chuck power supply are both coupled to the detector/filter through the chamber (see Figure 1).

20. With respect to claim 18, while neither of the RF power supply and the chuck power supply are explicitly taught as capable of converting signals, each is connected through the system to a computer (Figure 1, inside 122) capable of comprising conversion software which it would be obvious to one of ordinary skill in the art to use for conversion purposes.

21. With respect to claim 19 and 20, the test signal source further comprises a controller (110) coupled to at least one of the filter/detector and an antenna. The controller comprises at least one of a microprocessor, a microcontroller, a timer, a digital signal processor, memory, receiver, A/D converter and D/A converter (see paragraph 30 and Figure 1).

22. With respect to claims 15 and 16, Cruse discloses a material processing system substantially as claimed and comprising: a processing tool, a test signal source (paragraph 27) providing a first test signal and a second test signal; a filter/detector (122) for determining an intermodulation product of the first test signal and the first test signal (see paragraphs 33 and 37); and a controller (paragraph 20) coupled to the filter/detector and the processing tool for determining characteristics of processing within the chamber. With respect to specific signals

created during processing which would be directly dependent on the intended processing, the courts have ruled that a claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

23. However, Cruse fail to teach the test signal source comprising a first source for providing the first test signal, a second source for providing the second signal, a summing circuit for combining the first test signal and the second test signal, an isolation amplifier for amplifying the first test signal and the second test signal, and antenna for transmitting the first test signal and the second test signal, wherein the antenna is coupled to the process chamber.

24. Koizumi et al. teach providing a summing circuit (function generator) and an isolation amplifier (linear amplifier) for providing two signals to a plasma processing chamber for the purpose of doing so in a unitarily managed and easily adjustable way (column 9, rows 19-55).

25. It would have been obvious to one of ordinary skill in the art at the time the Applicant’s invention was made to have provided a function generator and an isolation amplifier in Cruse in order to provide two singles in a unitarily managed and easily adjustable way as taught by Koizumi et al.

26. One of ordinary skill in the art would have further realized that the signals would be provided to the process chamber via an antenna, as this is conventional. One of ordinary skill in the art would further recognize that the signals could be provided any wave manner (i.e. with a sine wave, pulsed wave, etc.) depending on the desired operating characteristics.

27. With respect to claim 25, see above descriptions.

Response to Arguments

28. Applicant's arguments with respect to claims 2-3, 5-20 and 24-25 have been considered but are moot in view of the new ground(s) of rejection. Gesche et al. teach providing means for determining the presence of a plasma in a plasma processing tool in addition to other processing parameters of the plasma.

29. Examiner also notes that Cruse discloses detection of an intermodulation product of two RF signals in the presence of plasma at paragraph 37.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 9:00 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Karla Moore
Primary Examiner
Art Unit 1763
17 September 2006